

App. No. 10/526,858
Office Action Dated July 18, 2007

REMARKS

Reconsideration is respectfully requested in view of the above amendments and following remarks. Claim 27 is amended and is supported for example on page 9, lines 14-29 and at pages 14 and 18-20 of the specification. Claims 15 and 16 also are amended as a result of the revision to claim 27. No new matter has been added. Claims 15-16, and 27 are pending.

Applicants appreciate the Examiner's courtesy in interviewing this case on December 13, 2007. In the interview, a proposed amendment of claim 27 was briefly discussed. The Examiner indicated that such a claim amendment would require further consideration and a formal determination on the allowability of the claims was not reached. Additionally, the remaining enablement and unexpected results issues were discussed. In view of the interview, Applicants respectfully submit the present response.

Claims 15, 16, and 27 are rejected under 35 U.S.C. 112, first paragraph, for lack of enablement. Applicants respectfully traverse this rejection to the extent it is maintained.

Claim 27 has been revised to include the list of cancers supported, for example at pages 14 and 18-20 of the specification. Furthermore, Applicants respectfully submit that the compounds as claimed have been demonstrated to have cell-growth inhibitory effect on various cancer cells, including KB (human nasopharynx carcinoma), Colon 38 (mouse colon cancer), WiDr (human colorectal cancer, and Colon-26 (mouse colon cancer) cells. The compounds have been shown to exhibit a survival advantage, for example in the *in vivo* experiment for evaluating the anti-cancer activity against mouse monocytic leukemia P-338 cell line. Furthermore, it is well known that antitumor agents cisplatin and carboplatin have been effective on a wide variety of cancers. Accordingly, one of skill in the art would recognize that the effectiveness of the combined use of the compounds claimed with cisplatin and/or carboplatin, such as shown on the several malignant tumors in the working Examples of Applicants' specification, may be applied to the malignant tumors as claimed. For at least the foregoing reasons, claims 15, 16, and 27 are enabled.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

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Claims 15, 16, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over reference combinations including Hidaka et al. (US 5972976) in view of Goodman and Gilman, *The Pharmacological Basis of therapeutics* and Ragaz et al., *The New England J. of Med.* Applicants respectfully traverse the rejection to the extent it is maintained.

Claim 27 is directed to a method for treating a patient suffering from malignant tumor comprising administering a therapeutically effective amount of at least one compound selected from the group consisting of (E)-4-[2-[2-[N-[(p-methoxyphenyl)sulfonyl]amino]phenyl]ethenyl]pyridine, (E)-4-[2-[2-[N-acetyl-N-[(p-methoxyphenyl)sulfonyl]amino]phenyl]ethenyl]pyridine 1-oxide, (E)-4-[2-[2-[N-[(p-methoxyphenyl)sulfonyl]amino]phenyl]ethenyl]pyridine 1-oxide, (E)-4-[2-[2-[N-acetyl-N-[(p-methoxyphenyl)sulfonyl]amino]phenyl]ethenyl]pyridine, (E)-4-[2-[2-[N-(2-hydroxyethyl)-N-[(p-methoxyphenyl)sulfonyl]amino]phenyl]ethenyl]pyridine 1-oxide, and (E)-4-[2-[2-[N-(2-hydroxyethyl)-N-[(p-methoxyphenyl)sulfonyl]amino]phenyl]ethenyl]pyridine or a pharmaceutically acceptable salt thereof in combination with at least one other antitumor agent to the patient in need thereof, wherein the other antitumor agent is selected from the group consisting of cisplatin and carboplatin.

The references cited, however, do not teach or suggest claim 27, namely any of the six compounds claimed in combination with the recited other antitumor agent. For at least this reason, claim 27 and its dependent claims 15 and 16 are patentable.

Moreover, the claimed invention provides unexpected advantageous results in that an antitumor effect can be increased while toxicity of respective agents can be reduced. That is, the present invention can provide enhanced therapeutic effect while decreasing side effects. The rejection contends that the disclosure relied upon is insufficient to show unexpected results, because the combined use of a compound 2 and cisplatin (CDDP) merely shows an added therapeutic effect resulting from increased dosages and not synergistic effects. Applicants respectfully disagree and contend that the evidence shows the claimed invention enjoys unexpected results.

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Table 1 shows that the therapeutic method of the claimed invention provides unexpected results, namely the synergism of administering the compound as claimed with at least one of carboplatin and cisplatin. Table 1 shows that simultaneous or sequential administration of compound 2 and cisplatin (CDDP) exerts superior effect over single administration of each agent at corresponding dosages. To properly evaluate the Table 1 results, the T/C (%) exceeding 100% must be compared between the T/C(%) value of combined administration at a certain dose of, for example an embodiment of the claimed compound with cisplatin and/or carboplatin, against single administration at corresponding doses of each of the compound and cisplatin/carboplatin. As shown by Table 1, simultaneous administration, for example at a dose of 100mg/kg for Compound 2 and a dose of 10mg/kg for CDDP, exhibited an excess survival rate value T/C(%) (i.e. over 100%) of 190, whereas single administration at the same doses only exhibited an excess survival rate value T/C(%) of 65 and 70, respectively, which the sum of those values is 135. Synergistic results are also shown at a dose of 50mg/kg for Compound 2 and a dose of 5mg/kg for CDDP, where the T/C (%) exceeding 100% is 140 for simultaneous administration, but the T/C (%) exceeding 100% is only 100 (30 for Compound 2 and 70 for CDDP) for single administration at the same doses. See Appendix attached herewith presenting the comparisons of the Table 1 results. Similar synergistic effects are also seen with sequential administration. For at least the foregoing, unexpected results are shown, namely that synergistic anti-tumor effects are exhibited by the features of claims 15, 16, and 27. Applicants respectfully submit that the claims are not obvious.

In view of the foregoing findings, Applicants submit that the present invention provides benefits that would have been unexpected to one of ordinary skill in the art. Thus, the claimed invention is not obvious over Hidaka et al, Goodman, and Ragaz. For at least the foregoing reasons, claim 15-16, and 27 are patentable.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

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A Notice of Allowance is respectfully solicited. Any questions or concerns regarding this communication can be directed to Applicants' representative listed below.

Respectfully submitted,

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Appendix

Appendix

	Day 1	Day 2	T/C(%)	T/C(Combination)-100%	$\frac{\{T/C(Combination)\}}{100} + \frac{\{T/C(Compound 2)\}}{100}\% \Delta$
X*	Com. 2 (25 mg/kg)	—	125		
	Com. 2 (50 mg/kg)	—	130		
	Com. 2 (100 mg/kg)	—	165		
	—	Com. 2 (25 mg/kg)	130		
	—	Com. 2 (50 mg/kg)	130		
	—	Com. 2 (100 mg/kg)	150		
	CDDP (2.5 mg/kg)	—	145		
	CDDP (5 mg/kg)	—	170		
	CDDP (10 mg/kg)	—	170		
	—	CDDP (2.5 mg/kg)	155		
Y*	—	CDDP (5 mg/kg)	170		
	—	CDDP (10 mg/kg)	170		
	Com. 2 (25mg/kg) +CDDP(2.5mg/kg)	—	160	160 - 160	{125-100} (145-100) 150
	Com. 2(50 mg/kg) +CDDP(5 mg/kg)	—	240	240 - 240	{130-100} (170-100) 150
Z*	Com. 2(100 mg/kg) +CDDP(10 mg/kg)	—	290	290 - 290	{165-100} (170-100) 150
	Com. 2 (25 mg/kg)	CDDP (2.5 mg/kg)	175	175 - 175	{125-100} (155-100) 150
	Com. 2 (50 mg/kg)	CDDP (5 mg/kg)	195	195 - 195	{130-100} (170-100) 150
	Com. 2 (100 mg/kg)	CDDP (10 mg/kg)	270	270 - 270	{165-100} (170-100) 150
	CDDP (2.5 mg/kg)	Com. 2 (25 mg/kg)	170	170 - 170	{125-100} (155-100) 150
	CDDP (5 mg/kg)	Com. 2 (50 mg/kg)	215	215 - 215	{130-100} (170-100) 150
	CDDP (10 mg/kg)	Com. 2 (100 mg/kg)	>500	500 - 500	{165-100} (170-100) 150

X*: single administration

Y*: simultaneous administration

Z*: sequential administration

Com. 2: Compound (2)